

In the Claims:

Claims 1-38 (Canceled).

39. (Currently amended): A holding device for an optical element in an objective having a mount that is connected to the objective and at least indirectly to the optical element, there being arranged between the mount and the optical element a reinforcing element whose coefficient of thermal expansion corresponds substantially to the coefficient of thermal expansion of the optical element; ~~and~~

the reinforcing element is positioned outside the optical path of the optical element; and

wherein the holding device seals the objective from a fluid entering the objective.

40. (Previously Presented): The holding device as claimed in claim 39, wherein a seal or gasket is arranged between the optical element and the reinforcing element.

41. (Previously Presented): The holding device as claimed in claim 39, wherein the reinforcing element and the optical element are composed of the same material.

42. (Previously Presented): The holding device as claimed in claim 40, wherein the reinforcing element and the optical element are composed of the same material.

43. (Previously Presented): The holding device as claimed in claim 41, wherein the reinforcing element and the optical element consist of SiO_2 .

44. (Previously Presented): The holding device as claimed in claim 41, wherein the reinforcing element and the optical element consist of CaF_2 .

45. (Previously Presented): The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by a wrung connection.

46. (Previously Presented): The holding device as claimed in claim 40, wherein the optical element and the reinforcing element are connected to one another by a wrung connection.

47. (Previously Presented): The holding device as claimed in claim 41, wherein the optical element and the reinforcing element are connected to one another by a wrung connection.

48. (Previously Presented): The holding device as claimed in claim 45, wherein the optical element and the reinforcing element in each case have substantially flat surfaces in the region of the wrung connection.

49. (Previously Presented): The holding device as claimed in claim 45, wherein the optical element and the reinforcing element in each case have spherical surfaces in the region of the wrung connection.

50. (Previously Presented): The holding device as claimed in claim 45, wherein the optical element and the reinforcing element in each case have aspheric surfaces in the region of the wrung connection.

51. (Previously Presented): The holding device as claimed in claim 45, wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the wrung connection.

52. (Previously Presented): The holding device as claimed in claim 45, wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the wrung connection and wherein a seal or gasket is arranged between the optical element and the reinforcing element.

53. (Previously Presented): The holding device as claimed in claim 51, wherein the protective layer is formed by sol-gel materials.

54. (Previously Presented): The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by bonding.

55. (Previously Presented): The holding device as claimed in claim 40, wherein the optical element and the reinforcing element are connected to one another by bonding.

56. (Previously Presented): The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by bonding and wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the bonding connection.

57. (Previously Presented): The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by soldering.

58. (Previously Presented): The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by soldering and wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the soldering connection.

59. (Previously Presented): The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are designed in one piece with one another.

60. (Previously Presented): The holding device as claimed in claim 39, wherein a seal or gasket is arranged between the mount and the reinforcing element.

61. (Previously Presented): The holding device as claimed in claim 40, wherein a seal or gasket is arranged between the mount and the reinforcing element.

62. (Previously Presented): The holding device as claimed in claim 60, wherein the seal or gasket is arranged in such a way that contact between the same and an immersion medium is avoided.

63. (Previously Presented): The holding device as claimed in claim 39, wherein the reinforcing element is held inside the mount by an isostatic bearing.

64. (Previously Presented): The holding device as claimed in claim 63, wherein the isostatic bearing has a plurality of, preferably three, elastic support points between the reinforcing element and the mount.

65. (Previously Presented): The holding device as claimed in claim 39, wherein the reinforcing element is fitted on the mount by a plurality of fastening elements.

66. (Previously Presented): The holding device as claimed in claim 60, wherein the reinforcing element is fitted on the mount by a plurality of fastening elements.

67. (Previously Presented): The holding device as claimed in claim 65, wherein the fastening elements act on a neutral fiber of the reinforcing element.

68. (Previously Presented): The holding device as claimed in claim 39, wherein at least one elastic decoupling element is arranged between the mount and the reinforcing element.

69. (Previously Presented): The holding device as claimed in claim 60, wherein at least one elastic decoupling element is arranged between the mount and the reinforcing element.

70. (Previously Presented): The holding device as claimed in claim 68, wherein the elastic decoupling element has a plurality of coupling members that rest on a spherical surface of the reinforcing element.

71. (Previously Presented): The holding device as claimed in claim 39, wherein the optical element is designed as a terminating element.

72. (Previously Presented): The holding device as claimed in claim 40, wherein the optical element is designed as a terminating element.

73. (Currently amended): An objective having an optical element and having a holding device for the optical element having a mount ~~that, the~~ mount is connected, ~~on the one hand,~~ to the objective and, ~~on the other hand,~~ at least indirectly to the optical element, there being arranged between the mount and the optical element a reinforcing element; and
a seal positioned between the optical element and the reinforcing element, whose the seal comprising a coefficient of thermal expansion that corresponds substantially to the coefficient of thermal expansion of the ~~optical element~~ reinforcing element.

74. (Previously Presented): The objective as claimed in claim 73, which is designed as a lithography objective.

75. (Withdrawn): The objective as claimed in claim 74, said objective being an immersion lithography objective.

76. (Withdrawn): The objective as claimed in claim 75, wherein provided between the optical element and an optical element arranged inside the lithography objective are a feed line for gas or immersion medium, and a removal line for gas or immersion medium.

77. (Withdrawn): The objective as claimed in claim 75, wherein provided between the optical element and an immersion medium are a gas feed line and a gas extraction line to and from an immersion medium space.

78. (Withdrawn): The objective as claimed in claim 76, wherein provided between the optical element and an immersion medium are a gas feed line and a gas extraction line to and from an immersion medium space.

79. (Previously Presented): The objective as claimed in claim 73, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

80. (Previously Presented): The objective as claimed in claim 74, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

81. (Withdrawn): The objective as claimed in claim 75, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

82. (Withdrawn): The objective as claimed in claim 76, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

83. (Withdrawn): The objective as claimed in claim 77, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

84. (Withdrawn): The objective as claimed in claim 75, wherein a measuring system for determining the tilt and/or the decentering and/or the axial position of the optical element is connected to the manipulation device.

85. (Withdrawn): The objective as claimed in claim 84, wherein a control loop for controlling the tilt and/or the decentering and/or the axial position of the optical element is provided which has the manipulation device, the measuring system and a control device.

Claims 86-99 (Canceled).

100. (Previously Presented): The holding device as claimed in claim 39, wherein the reinforcing element comprises an aperture.

101. (Previously Presented): The holding device as claimed in claim 39, wherein the reinforcing element comprises a structure configured as a ring.

102. (Previously Presented): The holding device as claimed in claim 39 further comprising:

a connecting device between the reinforcing element and the optical element; and

a seal or gasket between the reinforcing element and the optical element.

103. (Previously Presented): The holding device as claimed in claim 39 further comprising a seal or gasket arranged between the mount and the reinforcing element.

104. (Currently amended): A holding device for an optical element in an objective having a mount, the holding device comprising a reinforcing element arranged between the mount and the optical element, the reinforcing element comprising:

a coefficient of thermal expansion that corresponds substantially to the coefficient of thermal expansion of the optical element; and

an aperture; and

a contact surface in contact with a surface portion of the optical element, the contact surface comprising a geometric configuration that corresponds substantially to a geometric configuration of the surface portion of the optical element.

105. (Previously Presented): The holding device as claimed in claim 104, wherein the optical element is received over the aperture.

106. (Previously Presented): The holding device as claimed in claim 104, wherein the reinforcing element comprises a structure configured as a ring.

107. (Previously Presented): The holding device as claimed in claim 104, wherein the reinforcing element is positioned outside the optical path of the optical element.

108. (Previously Presented): A holding device for an optical element in an objective having a mount, the holding device comprising a reinforcing element arranged between the mount and the optical element, the reinforcing element comprising:

a coefficient of thermal expansion that corresponds substantially to the coefficient of thermal expansion of the optical element;

a connecting device between the reinforcing element and the optical element; and

a seal or gasket between the reinforcing element and the optical element.

109. (Previously Presented): The holding device as claimed in claim 108, wherein the connecting device comprises a wrung connection.

110. (Previously Presented): The holding device as claimed in claim 108, wherein the reinforcing element comprises the same material as the seal or gasket.

111. (Previously Presented): A holding device for an optical element in an objective having a mount, the holding device comprising a reinforcing element arranged between the mount and the optical element, the reinforcing element comprising:

a coefficient of thermal expansion that corresponds substantially to the coefficient of thermal expansion of the optical element; and

a seal or gasket between the mount and the reinforcing element.

112. (Previously Presented): The holding device as claimed in claim 111, wherein the seal or gasket comprises a diaphragm.

113. (Previously Presented): The holding device as claimed in claim 111, wherein the seal or gasket comprises a bellows.

114. (New): The holding device as claimed in claim 39, wherein the sealment by the holding device comprises a configuration that prevents capillary action between the reinforcing element and the optical element.

115. (New): The holding device as claimed in claim 39, wherein the fluid comprises a liquid or gas.

116. (New): The holding device as claimed in claim 39, further comprising a fastening element between the mount and the reinforcement element, the fastening element secured to the reinforcement element at a region of the reinforcement element having the least thermal deformation.

117. (New): The holding device as claimed in claim 39, wherein the reinforcement element is coated with a material to prevent corrosive effects from the fluid.

118. (New): The objective as claimed in claim 73, wherein the seal comprises a discrete structure, the discrete structure comprising at least one of a sealing ring and a gasket.

119. (New): The objective as claimed in claim 73, wherein the seal provides an air-tight seal for the objective.

120. (New): The objective as claimed in claim 73, wherein the coefficient of thermal expansion of the seal corresponds substantially to both of the coefficient of thermal expansion of the optical element and the coefficient of thermal expansion of the reinforcing element.

121. (New): The holding device as claimed in claim 104, wherein the contact surface comprises a planar geometric configuration and the surface portion of the optical element comprises a planar geometric configuration.

122. (New): The holding device as claimed in claim 104, wherein the contact surface comprises an arcuate geometric configuration and the surface portion of the optical element comprises an arcuate geometric configuration.

123. (New): The holding device as claimed in claim 39, wherein said objective is an immersion lithography objective.

124. (New): The holding device as claimed in claim 123, wherein provided between the optical element and an optical element arranged inside the lithography objective are a feed line for gas or immersion medium, and a removal line for gas or immersion medium.

125. (New): The holding device as claimed in claim 123, wherein provided between the optical element and an immersion medium are a gas feed line and a gas extraction line to and from an immersion medium space.

126. (New): The holding device as claimed in claim 123, wherein provided between the optical element and an immersion medium are a gas feed line and a gas extraction line to and from an immersion medium space.

127. (New): The holding device as claimed in claim 123, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

128. (New): The holding device as claimed in claim 123, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

129. (New): The holding device as claimed in claim 127, wherein a measuring system for determining the tilt and/or the decentering and/or the axial position of the optical element is connected to the manipulation device.

130. (New): The holding device as claimed in claim 129, wherein a control loop for controlling the tilt and/or the decentering and/or the axial position of the optical element is provided which has the manipulation device, the measuring system and a control device.

131. (New): The holding device as claimed in claim 39, wherein the objective comprises an immersion lithography objective and wherein the optical element comprises a first optical element subjected to a first immersion medium, the immersion lithography objective further comprising:

- a second optical element;

- a feed line for a second immersion medium; and

- a removal line for the second immersion medium.

132. (New): The holding device as claimed in claim 131, wherein:
the feed line is arranged between the first and second optical elements; and

the removal line is arranged between the first and second optical elements.

133. (New): The holding device as claimed in claim 131, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

134. (New): The holding device as claimed in claim 133, wherein a measuring system for determining the tilt and/ or the decentering and/or the axial position of the optical element is connected to the manipulation device.

135. (New): The holding device as claimed in claim 134, wherein a control loop for controlling the tilt and/or the decentering and/or the axial position of the optical element is provided which has the manipulation device, the measuring system and a control device.